

## **Reusing XML Schemas Registered in the DoD Data Services Environment**

The DoD Data Services Environment contains numerous XML Schema documents defining data elements from across the Department. As a result XML Schema developers and data modelers are typically interested in reusing some of the entities defined in the XML Schemas registered on the DoD DSE rather than re-creating their own. This document is intended to address the commonly asked question:

*How do I reference XML Schemas that are registered on the DoD Data Services Environment in my own XML Schemas?*

The answer to this question revolves around the DoD DSE's user-defined URL capability. Every XML Schema registered on the DoD Data Services Environment has assigned to it a URL at which the XML Schema can be retrieved. This URL is either machine generated by the DSE or it is user-defined, i.e. a user wishing to use the XML Schema has assigned a URL to the XML Schema at which others can retrieve the XML Schema. The following screenshot from the DDMS XML Schema Details Page on the Data Services Environment illustrates this concept.

[new screen capture]

As an example, here we see that the DDMS Schema Version 1.4.1 has multiple URLs associated with it, one is machine generated by the DoD Data Services Environment, specifically this one: <http://metadata.ces.mil/dse/irs/schemas/CES/1.4.1/DDMS%20XML%20Schema%20Version%201.4.1>, while the others are user-defined, namely:

<http://metadata.dod.mil/dse/ns/DDMS/1.4/>, and  
<http://metadata.dod.mil/dse/ns/DDMS/1.4.1/> and  
<http://metadata.dod.mil/dse/ns/DDMS/current/>, and  
[http://metadata.dod.mil/dse/ns/DDMS/1.4/DDMS-v1\\_4\\_1.xsd](http://metadata.dod.mil/dse/ns/DDMS/1.4/DDMS-v1_4_1.xsd).

The dereferencing of any of these URLs results in the DDMS XML Schema version 1.4.1 being returned. (And remember, one can always add another user-defined URL to better facilitate reuse of XML Schema in which one is interested if necessary.)

So in order to reference these XML Schemas in a new XML Schema under development the best way to reference an existing registered XML Schema (e.g. the DDMS version 1.4.1) is by using one of these user-defined URLs in an `xs:import` statement within the XML Schema under development. For example:

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:ddms="http://metadata.ces.mil/dse/ns/DDMS/1.4/"
  xmlns:tmp="http://metadata.ces.mil/dse/ns/TBD/TestSchema.xsd"
  targetNamespace="http://metadata.ces.mil/dse/ns/TBD/TestSchema.xsd" elementFormDefault="qualified"
  attributeFormDefault="unqualified">
```

```

<xs:import namespace="http://metadata.ces.mil/dse/ns/DDMS/1.4/"
schemaLocation="http://metadata.ces.mil/dse/ns/DDMS/1.4/DDMS-v1_4_1.xsd"/>

  <xs:element name="MyTestElement">
    <xs:annotation>
      <xs:documentation>Comment describing your root element</xs:documentation>
    </xs:annotation>
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="ddms:Resource"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>

</xs:schema>

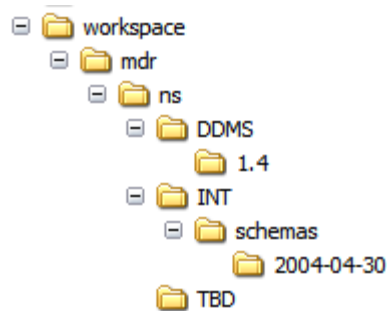
```

While this is relatively straightforward, because the DSE exists on multiple networks, the server namp portion of the URLs, i.e. “metadata.ces.mil” is not consistent across the various DoD networks. This presents a complication, namely that the URL [http://metadata.dod.mil/dse/ns/DDMS/1.4/DDMS-v1\\_4\\_1.xsd](http://metadata.dod.mil/dse/ns/DDMS/1.4/DDMS-v1_4_1.xsd) will only dereference properly on NIPRNet and not on the SIPRNet network.

The solution to this is to use relative URLs rather than absolute URLs. This means that in preparation for registering a new XML Schema, if it is to be available and valid on all networks on which the DSE exists, one must establish a user-defined URL at which the XML Schema under development will be made available.

Once a URL has been decided upon the easiest way to ensure that relative references will work properly is to create a development environment that mocks how the paths will work on the DoD Data Services Environment. To illustrate this point, we will take the XML Schema in the example above and modify it to use relative references so that it will be available and valid across the DoD Networks on which the DSE exists.

The first step is to establish the URL at which we would like this XML Schema to be available. For this example we’ll use <http://metadata.dod.mil/dse/ns/TBD/TestSchema.xsd>. The “http://metadata.dod.mil/dse/ns” portion of the URL is required, while the “TBD/TestSchema.xsd” is the user-defined portion. In this schema we wish to refer to the DDMS 1.4.1 XML Schema because we wish to use the ddms:Resource element within this new XML Schema. So we want to reference the DDMS by one of the URLs above but we want to do it in a way that will be relative to this new XML Schema. The easiest way to do this is to mimic the DDMS URL path structure in our development environment so we’ll create such a structure in our working directory. This directory structure looks something like this:



We see that we've begun at the DSE level, i.e. at the level at which we know the URLs will be identical on the various DoD Networks (basically, the hostname will change on each network so we've removed the <http://metadata.ces.mil> portion of the path). The DDMS is available at <DSE Hostname>/dse/ns/DDMS/1.4/DDMS-v1\_4.xsd so we've copied all of the DDMS files into workspace/dse/ns/DDMS/1.4/. We've also copied the INT namespace structure because the DDMS depends on the IC-ISM XML Schemas. Finally, we've created a TBD namespace in which our new XML Schema will live (recall, <http://metadata.ces.mil/dse/ns/TBD/TestSchema.xsd>). Now we've effectively cloned the URL path structure as it exists on the DSE for the DDMS and will exist for our new XML Schema.

Now we can open TestSchema.xsd in our favorite XML Schema editing tool and refer relatively to our local copy of the DDMS XML Schema so our XML Schema now looks like this:

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:ddms="http://metadata.ces.mil/dse/ns/DDMS/1.4/"
  xmlns:tbd="http://metadata.ces.mil/dse/ns/TBD/TestSchema.xsd"
  targetNamespace="http://metadata.ces.mil/dse/ns/TBD/TestSchema.xsd" elementFormDefault="qualified"
  attributeFormDefault="unqualified">

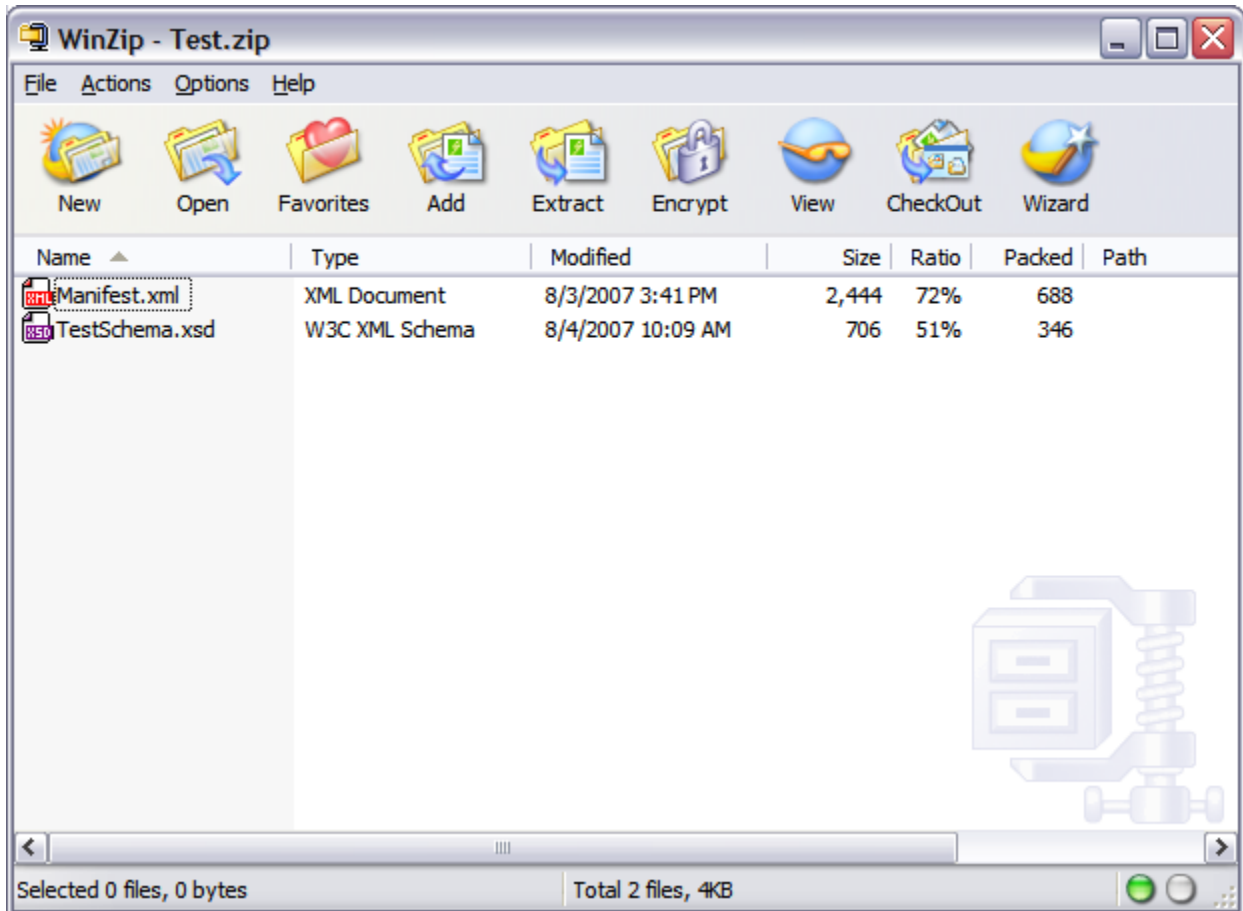
  <xs:import namespace="http://metadata.dod.mil/dse/ns/DDMS/1.4/"
    schemaLocation="../DDMS/1.4/DDMS-v1_4_1.xsd"/>

  <xs:element name="MyTestElement">
    <xs:annotation>
      <xs:documentation>Comment describing your root element</xs:documentation>
    </xs:annotation>
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="ddms:Resource"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>

</xs:schema>
  
```

Now when we register the TestSchema.xsd on the Metadata Registry in the TBD Governance Namespace and assign it a user-defined URL of "<http://metadata.ces.mil/dse/ns/TBD/TestSchema.xsd>" the internal relative reference to the DDMS in the xs:import statement points to the instance of the DDMS version 1.4.1 XML

Schema registered on the DoD DSE. Additionally, there is no need to re-register the DDMS, in fact our DSE Package submission will look like this:



After registration we can then navigate to the new package on the DSE, find our XML Schema and use the “Add URL” feature to assign our desired URL. Once the URL has been assigned we’re finished.

And that’s how to refer to XML Schemas registered on the DoD Data Services Environment in your own XML Schemas.